Digital Student Guide – Online Version

Student Guide

BasicPlus

CPR, AED, and First Aid For Adults

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MEDIC First Aid

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Student Guide

Version 7.0

Purpose of this Guide

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The First Aid Provider

At work, injuries and illnesses kill about 2.2 million people in the world each year.[i] Unintentional injury is the leading cause of death in the United States for individuals younger than 44 years of age. On average, 15 workers die each day in the U.S. from traumatic injuries, and more than four million workers suffer a nonfatal injury or illness each year.[ii]

In the U.S., about one-third of all injuries and 20 percent of injury deaths occur at home. For every home injury death there are about 650 nonfatal home injuries.[iii]

Safe practices at work, home, and play can prevent many injuries, illnesses, and deaths. However, once injury or sudden illness has occurred, effective first aid can make the difference between a rapid or prolonged recovery, a temporary or permanent disability, and even life or death.

The Occupational Safety and Health Administration, or OSHA, defines first aid as “emergency care provided for injury or sudden illness before professional emergency medical treatment becomes available.”

A first aid provider is someone trained in the delivery of initial emergency procedures, using limited equipment to perform a primary assessment and intervention until Emergency Medical Services, or EMS personnel arrive. The essential responsibilities of a first aid provider are:

- Recognizing a medical emergency
- Making the decision to help
- Identifying hazards and ensuring personal safety
- Activating the EMS system
- Providing supportive, basic first aid care

The goal of this training is to help you gain the knowledge, skills, and confidence necessary to manage a medical emergency until more advanced help is available. First aid does not require making complex decisions or having in-depth medical knowledge. It is easy to learn, remember, and perform.

Legal Considerations

Some people fear being sued as a result of performing first aid in an emergency. Understanding more about the legalities can help reduce this fear.

All states have passed what are known as "Good Samaritan laws" to help encourage bystanders to assist those in need. These laws help protect anyone who:

- Voluntarily provides assistance, without expecting or accepting compensation,
- Is reasonable and prudent,
- Does not provide care beyond the training received, and
- Is not "grossly negligent," or completely careless, in delivering emergency care.

Good Samaritan laws vary slightly from state to state. Become familiar with the laws in your state and other states where you work or travel.

Everyone has the right to refuse medical treatment. It is appropriate to ask a responsive person if they want help before providing care. When a person is or becomes unresponsive, the legal concept of "implied consent" allows a provider to help without asking, because it assumes the person would agree to be helped if responsive.

Once care has begun, and it is safe to do so, remain with an ill or injured person until someone with equal or greater emergency medical training takes over. If you are alone, it is okay to leave to activate EMS, but return to the person as soon as you can.

There has never been a successful lawsuit in the United States against a person providing first aid in good faith. Still, it is appropriate to use common sense:

- Activate EMS immediately.
- If the scene is unsafe, do not enter!
- Ask a responsive person for permission before giving care.
- Never attempt skills that exceed your training.
- And, once you have started, don't stop until someone with equal or greater training relieves you.

Other Legal Considerations

Duty to Act — A pre-determined requirement to provide care, typically by job description (such as firefighter, police officer, or lifeguard) or by relationship (such as parent or guardian). In general, a first aid trained person is encouraged, but not required by duty, to act.

Negligence — Occurs when someone is caused further harm due to care that did not meet the expected standard of someone with a duty to act.

Assault and Battery — Placing a person in fear of bodily harm. Forcing care on a person against his wishes may be considered grounds for this.

Recognizing an Emergency and Deciding to Help

A general impression is a quick sense of what has occurred, or is occurring, when you first observe an emergency scene. This impression can help guide you in your approach.

If injured, how was the person injured? Injuries occur from physical force against the body. The manner in which that force creates an injury is called the Mechanism of Injury. Mechanisms that transfer significant force are best assumed to result in serious injury until proven otherwise.

Does the person appear to be unresponsive? A person who is not moving and appears to have collapsed can be in a life-threatening condition known as sudden cardiac arrest. Your immediate assessment and care can be his or her only chance for survival.

The most critical decision you will make is whether to get involved when a medical emergency has occurred. It is normal to feel hesitant because you are unsure of your ability to help.

- You might hesitate because you feel like you are alone in helping. You are only the first link in a progressive chain of emergency care. Your involvement lasts only until relieved by another first aid provider or responding EMS providers — in most cases, a very short period of time.
- You might hesitate for fear of making things worse. Your basic first aid training provides you with sound knowledge and skills designed only to help — and not harm — those in need.
- You might also hesitate because you think you don't have a lot of medical knowledge. Extensive medical knowledge is not necessary. First aid skills are based on common sense and simple, effective procedures that can be easily learned and safely applied.
- Finally, you might hesitate because others have already stopped to help. It never hurts to see if additional assistance is needed. Other bystanders may not have any first aid training or may be hesitant to provide care.

Personal Safety

Emergency scenes are often unsafe. Your personal safety is always the highest priority, even before the safety of an ill or injured person. Putting yourself in danger to help someone can make the situation worse.

Always pause for a moment before approaching an emergency and look for obvious hazards. Consider the possibility of hidden dangers. If the scene is unsafe, do not approach. If the location you are already in becomes unsafe, get out!

SETUP

SETUP is an acronym that can help you remember the important points of making sure it is safe to provide care:

- **S**top — Pause to identify hazards
- **E**nvironment — Consider your surroundings
- **T**raffic — Be careful along roadways
- **U**nknown Hazards — Consider things that are not apparent
- **P**ersonal Safety — Use protective barriers

Respiratory Protection

Respirators protect workers against insufficient oxygen environments, harmful dusts, fogs, smokes, mists, gases, vapors, and sprays. These hazards may cause cancer, lung impairment, other diseases, or death. Compliance with the OSHA Respiratory Protection Standard could avert hundreds of deaths and thousands of illnesses annually.

Confined Spaces

Confined spaces are enclosed spaces that have limited or restricted entry and exit points. They are not intended for normal occupancy. Because of their restricted nature, these spaces can have a hazardous atmosphere lacking breathable air. Without appropriate respiratory protection, anyone, including a rescuer, is at risk. Proper training, equipment, and experience in confined space rescue are essential before attempting to help in an emergency.

Material Safety Data Sheets

A Material Safety Data Sheet, or MSDS, is a detailed document that describes the physical and chemical properties, physical and health hazards, routes of exposure, precautions for safe handling and use, emergency and first-aid procedures, and control measures for a specific chemical or substance. These sheets are prepared by manufacturers under OSHA regulation.

Disease Transmission and Universal Precautions

When caring for someone, you can be exposed to blood or other potentially infectious body fluids. While the risk of contracting a disease is extremely low, it is prudent to take simple measures to avoid exposure in the first place. Infectious bloodborne diseases include Hepatitis B, Hepatitis C, and HIV, the virus that causes AIDS.

Exposure can occur through the direct contact of infectious material with an open wound or sore, or through the mucous membranes of the mouth, nose, and eyes. Exposure can also occur through a skin puncture with a contaminated sharp object.

Reducing exposure lowers the chance of infection. **"Universal Precautions"** is an approach that recommends handling all blood and other body substances as if they are infectious. To be effective, the approach is the same for everyone, regardless of relationship or age.

Disposable gloves are the most commonly used barrier. Make sure there is always a fresh supply of gloves in your first aid kit. Inspect gloves for damage or tears when you put them on. If they are damaged, replace them immediately.

Always remove contaminated gloves carefully. Never snap them, as this may cause blood to splatter. Even after using gloves, use soap and water to clean your hands and any exposed skin. Use an alcohol-based hand sanitizer if soap and water are not available.

OSHA Bloodborne Pathogens Standard

In 1991, the Occupational Safety and Health Administration (OSHA) released the Bloodborne Pathogens Standard to protect workers from the risk of exposure to bloodborne infectious diseases. The standard applies to anyone who has occupational exposure to blood or other potentially infectious materials and provides information on how to reduce the risk of exposure in the workplace.

Employees should review their company's Exposure Control Plan for site-specific information on how to reduce exposure. More information can be found at www.osha.gov and www.cdc.gov.

If a person requires rescue breaths, use a shield or CPR mask with a one-way valve to minimize direct mouth-to-mouth contact.

A face shield can prevent mouth, nose, and eye exposure when there is a possibility of splashing or spraying.

If you don't have personal protective equipment during a first aid situation, improvise. A towel, plastic bag, or some other barrier can help avoid direct contact.

A provider may elect not to use barriers, depending on his relationship to the person and knowledge of the person's health status.

Latex Allergy

Natural rubber latex allergy is a serious medical problem. Anyone who uses latex gloves frequently is at risk for developing it. Simple measures such as the use of non-powdered latex gloves or non-latex alternatives can stop the development of latex allergy and new cases of sensitization.[iv]

Decontaminating Surfaces

Decontaminate all surfaces, equipment, and other contaminated objects as soon as possible. Clean with a detergent and rinse with water. Use a bleach solution of one quarter cup (.06 liter) of household bleach per one gallon (3.79 liters) of water to sanitize the surface. Spray on the solution and leave it in place for at least 2 minutes before wiping.

Removing Contaminated Gloves

Skill Sheet 1

Grasp First Glove

- Always remove contaminated gloves carefully. Never snap them, as this may cause blood to splatter.
- Without touching bare skin, pinch the glove at either palm with the fingers of the opposite hand.

Remove Inside Out

- Gently pull the glove away from the palm and toward the fingers, turning the glove inside out.
- Gather the glove you just removed with your gloved hand.

Slide Finger Under Second Glove

- Without touching the outside of the glove, carefully slide your bare index finger inside the wrist band of the second gloved hand.

Remove Inside Out

- Gently pull outwards and down, inverting the glove and trapping the first glove inside.
- Throw away gloves in an appropriate container to prevent any further contact.
- Wash hands with soap and water. If not available, wash hands with an alcohol-based hand rub.

Emergency Medical Services (EMS)

Emergency Medical Services, or EMS, describes the emergency medical response system developed within your community. An EMS system typically uses a specialized emergency communication network to gather information and dispatch appropriate emergency resources.

EMS providers within the system respond directly to emergency scenes, provide emergency medical care, and transport ill or injured people to a hospital.

One of your fundamental responsibilities as a trained provider is to activate the EMS system in an emergency. Immediate EMS activation is recommended when:

- A person is unresponsive
- A significant mechanism of injury has occurred
- A warning sign of serious illness exists
- The severity of a person's condition is unclear.

Activating EMS usually consists of calling an easy-to-remember universal emergency telephone number, such as 911.

Ideally, one person should call EMS while another person cares for the ill or injured person. An EMS dispatcher with specialized training will answer the call. The dispatcher will ask for basic information, such as:

- The type of emergency
- Location
- The number and conditions of those who are ill or injured
- What care is being provided.

Answer the dispatcher's questions as clearly as you can. Only hang up if directed to do so by the dispatcher.

You may have an emergency action plan (EAP) in your workplace that contains specific procedures on how to respond to internal emergencies and activate EMS. It is important to become familiar with the emergency plan where you work.

The majority of medical emergencies occur at home, so it is also smart to develop a personal emergency response plan for your home and review it frequently with members of your household.

Emergency Action Plans

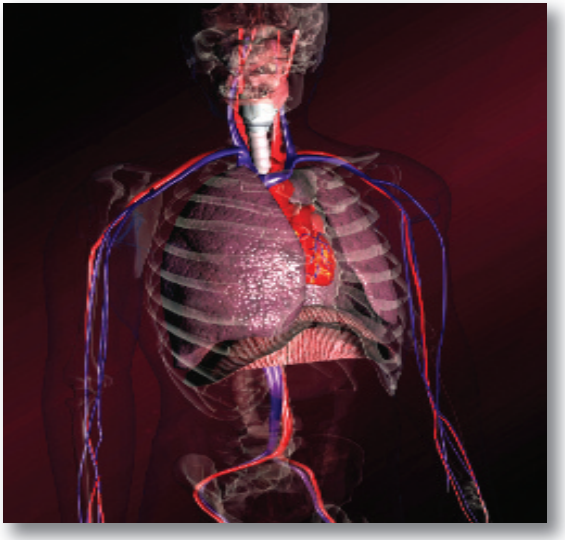
In the United States, the Occupational Safety and Health Administration (OSHA) regulations require employers to have an emergency action plan (EAP) in writing, kept in the workplace, and available to employees.[ii] In a typical workplace, the EAP should contain specific procedures on the following:

- How designated first aid workplace providers are notified to respond
- What is expected of workplace providers when they respond
- How to activate EMS from the worksite
- How to efficiently help EMS get to an ill or injured person

It is important to become familiar with the proper emergency response procedure in your workplace.

Respiratory and Circulatory Systems

Because the human body cannot store oxygen, it must continually supply tissues and cells with oxygen through the combined actions of the respiratory and circulatory systems.



The respiratory system includes the lungs and the "airway", the passage from the mouth and nose to the lungs. Expansion of the chest during breathing causes suction, which pulls outside air containing oxygen through the airway and into the lungs. Relaxation of the chest increases the pressure within and forces air to be exhaled from the lungs.

The circulatory system includes the heart and a body-wide network of blood vessels. Electrical impulses stimulate mechanical contractions of the heart to create pressure that pushes blood throughout the body. Blood vessels in the lungs absorb oxygen from inhaled air. The oxygen-rich blood goes to the heart and then out to the rest of the body.

Large vessels called arteries carry oxygenated blood away from the heart. Arteries branch down into very small vessels that allow oxygen to be absorbed directly into body cells so it can be used for energy production. Veins return oxygen-poor blood back to the heart and lungs where the cycle repeats.

Sudden Cardiac Arrest

Sudden cardiac arrest, or SCA, can occur without warning to anyone, at any time. It is one of the leading causes of death among adults in the United States.

Sudden cardiac arrest happens when the normal electrical impulses in the heart unexpectedly become disorganized. The normally coordinated mechanical contraction of the heart muscle is lost, and a chaotic, quivering condition known as ventricular fibrillation can occur.

Blood flow to the brain and body abruptly stops. The lack of blood and oxygen to the brain causes the person to quickly lose consciousness, collapse, and stop breathing.

Brain tissue is especially sensitive to a lack of oxygen. When oxygen is cut off, brain death can occur quickly, within a matter of minutes. Without early recognition and care from a bystander, the person will not survive.

Causes of SCA

- Heart disease
- Electrical shock
- Severe blood loss
- Drug overdose
- Severe allergic reaction
- Drowning

Early Defibrillation

Cardiopulmonary resuscitation, or CPR, allows a bystander to restore some oxygen to the brain through a combination of chest compressions and rescue breaths.

By itself, CPR is only a temporary measure that can buy time until more advanced care can be provided. The most effective treatment for ventricular fibrillation is defibrillation.

To defibrillate, electrode pads are applied to the chest and an electrical shock is sent between the pads through the heart. This shock stops ventricular fibrillation, so the heart's normal electrical activity can return and restore blood flow.

Successful defibrillation is often dependent on how quickly a person is defibrillated. For each minute a person is in cardiac arrest, his/her chance of surviving decreases by about 10 percent. After as little as 10 minutes, defibrillation is rarely successful. The amount of time it takes to recognize a problem, activate EMS, and have EMS respond and defibrillate is usually longer than 10 minutes. In most cases, it's too late.

An automated external defibrillator, or AED, is a small, portable, computerized device that is simple for a minimally trained bystander like you to operate.

Turning on an AED is as simple as opening a lid or pushing a power button. Once it is on, an AED will provide voice instructions to guide you through its use.

An AED automatically analyzes the heart rhythm, determines if a shock is needed, and charges itself to be ready to defibrillate. An operator simply pushes a button to deliver the shock when told to by the AED.

In many cases of sudden cardiac arrest, if defibrillation can be delivered sooner, before EMS arrives, more people would survive. Immediate, high-quality CPR and defibrillation with an AED from a bystander can double or even triple the chance for survival.

Chain of Survival

The Chain of Survival is used to describe the most effective approach for treating sudden cardiac arrest. It consists of five interdependent links:

- Immediate recognition and activation of EMS quickly initiates the treatment process.
- Early CPR with effective chest compressions buys time for accessing an AED and improves the chance that defibrillation will work.
- Rapid defibrillation provides the best chance to return the heart to a normal rhythm.
- Effective advanced life support procedures and medications used by paramedics, nurses, or doctors help sustain the chance for recovery and survival.
- And finally, integrated post-cardiac arrest care increases the likelihood of long-term survival.

If any one of the links is weak or missing, the chances for survival are greatly reduced. The greatest chance for survival exists when all links are working together.

Chest Compressions

If the heart stops, it is possible to restore at least some blood flow through the circulatory system by way of external chest compressions. The most effective chest compressions occur with the rhythmic application of downward pressure on the center of the chest.

External compressions increase pressure inside the chest and directly compress the heart, forcing blood to move from the heart to the brain and other organs.

Always compress fast and deep when performing compressions. Without losing contact, allow the chest to fully rebound at the top of each compression.

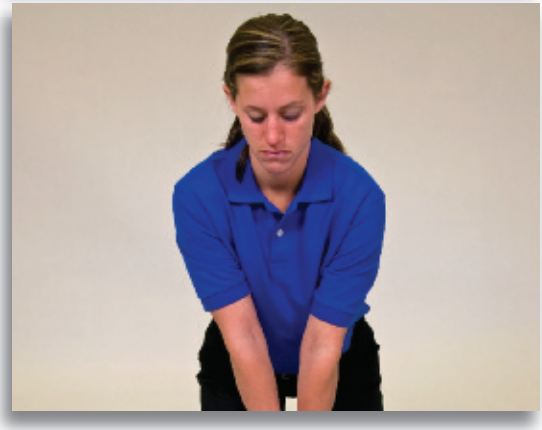
Blood pressure is created and maintained with well-performed compressions. If compressions stop, pressure is quickly lost and has to be built up again. Minimize any interruptions when doing compressions.

When compressing properly, you may hear and feel changes in the chest wall. This is normal. Forceful external chest compression is critical if the person is to survive.

Chest Compressions

Skill Sheet 2

- Position person face up on flat, firm surface. Kneel close to chest. Place heel of one hand on center of chest.
- Place heel of second hand on top of first. You can interlace your fingers to help keep off chest.



- Position your shoulders directly above your hands. Lock your elbows and use upper body weight to push.

- Push hard, straight down at least 2 inches. Lift hands and allow chest to fully rebound.
- Without interruption, push fast at a rate of at least 100 times per minute.
- Keep up the force and speed of compressions.

Rescue Breaths

Rescue breaths are artificial breaths given to someone who is not breathing. They are given by blowing air into the mouth to inflate the lungs. The air you breathe contains about 21% oxygen. Your exhaled air still contains up to 16–17% oxygen. This exhaled oxygen is enough to support someone's life for a short time.

Before giving rescue breaths, you need to make sure there is an open airway. The airway is the only path for getting air into the lungs.

Someone who is unresponsive can lose muscle tone. If flat on his/her back, this can cause the base of the tongue to relax and obstruct the airway. This is the most common cause of a blocked airway in an unresponsive person.

The tongue is attached to the lower jaw. Moving the jaw forward lifts the tongue away from the back of the throat and opens the airway.

The head tilt, chin lift airway technique is the recommended way to open and maintain an airway. Place one hand on the forehead. Place the fingertips of your other hand under the bony part of the chin. Apply firm, backward pressure on the forehead while lifting the chin upward. This will tilt the head back and move the jaw forward.

Maintain the head-tilt with your hand on the forehead. Avoid pressing into the soft tissue of the chin with your fingers, as this can also obstruct the airway. Leave the mouth slightly open. If you remove your hands, the airway will close again. Open the airway each time you give rescue breaths.

When caring for someone who is seriously injured, establishing an open airway is a higher priority than protecting a possible injury to the spine. Without an airway a person will not survive, regardless of illness or injury.

As a trained provider, you should use a protective barrier such as a CPR mask, or shield when giving rescue breaths, to minimize your exposure to infectious disease.

When giving breaths, avoid blowing too hard or too long. Air can be pushed into the stomach, making additional breaths more difficult and increasing the chance of vomiting. If you cannot get the chest to rise with your first breath, reposition the head further back by using head-tilt, chin lift again, and try another breath.

Unprotected Rescue Breaths

A provider may elect not to use barriers, depending on his or her relationship to the person and knowledge of the person's health status. Direct mouth-to-mouth rescue breaths can be performed using the same technique as with a CPR shield.

Mouth-to-nose rescue breaths may be useful if you have difficulty with mouth-to-mouth. Tilt the head back and close the mouth when lifting the chin. Seal your mouth around the nose and blow.

Rescue Breaths — CPR Mask

Skill Sheet 3

Position Mask

- Inspect mask to make sure one-way valve is in place.
- Place mask flat on person's face by laying top of mask over bridge of nose.
- Use thumb and forefinger to control the top of mask.
- Use thumb of other hand to control the bottom of mask.

Open Airway

- Hook fingertips of hand controlling bottom of mask under bony part of chin.
- Tilt head and lift chin. This brings the face up into the mask, creates an airtight seal, and opens the airway.

Give Breath

- Take a normal breath and blow through valve opening to deliver breaths.
- Each breath is 1 second in length. Create a visible rise of chest, but no more.
- Remove your mouth and let person exhale completely. Take a fresh breath between breaths.

Rescue Breaths — CPR Shield

Skill Sheet 4

Position Shield

- Place breathing port of shield over or into mouth.
- Spread shield flat over face.

Open Airway

- Place one hand across forehead.
- Hook fingertips of your other hand under bony part of chin.
- Tilt head and lift chin.

Give Breath

- Pinch nostrils to seal nose.
- Take a normal breath. Open your mouth wide. Press it on shield around person's mouth to create airtight seal. Blow through shield to deliver breath.
- Each breath is 1 second in length. Create a visible rise of chest, but no more.
- Remove your mouth and let person exhale completely. Take a fresh breath between breaths.

NOTE: The same technique can be used to provide mouth-to-mouth rescue breaths if you elect to not use a barrier device.

Primary Assessment — Unresponsive Person

The primary assessment helps you assess for immediate life-threatening problems, activate the EMS system, and rapidly provide priority care. It is the same for all ages and is performed quickly.

- Before anything else, pause and assess the scene for hazards. If the situation is dangerous to you, do not approach.
- Tap or squeeze the person's shoulder and ask loudly, "Are you okay?" Use the person's name if you know it.
- If the person is unresponsive, have another bystander activate EMS. If you are alone with an unresponsive adult, immediately alert EMS yourself. Get an AED, if one is available, and quickly return to the person.
- Look at the face and chest for normal breathing. Do this quickly. Normal breathing is effortless, quiet, and regular. If normal breathing is found, place the person on his or her side in the recovery position.

Weak, irregular gasping, snorting, or gurgling sounds can occur early in cardiac arrest. These actions provide no usable oxygen. This is not normal breathing. If someone is not breathing, or only gasping, perform CPR. Use the AED as soon as one becomes available.

Assess, Alert, and Attend

Assess, alert, and attend is a convenient way of remembering the general approach to a primary assessment. Assess the scene and person, alert or activate EMS, and attend to the person's problem until EMS arrives.

Primary Assessment — Unresponsive Person

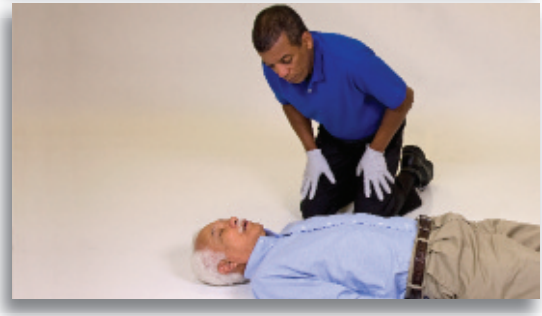
Skill Sheet 5

Assess Scene

- Pause and assess scene for safety.
- If unsafe, or if it becomes unsafe at any time, GET OUT!

Check for Response

- Tap or squeeze shoulder. Ask loudly, "Are you okay?"
- Use person's name if known.
- If unresponsive, have someone activate EMS and get an AED. If you are alone, place in a recovery position and do this yourself.



Look for Normal Breathing

- Position person face up on a firm, flat surface.
- Look quickly at face and chest for normal breathing. It is effortless, quiet, and regular.
- Weak, irregular gasping, snorting, or gurgling is NOT considered normal.

Provide Indicated Care

- If normal breathing is found, place an uninjured person on side in a recovery position.
- If person is not breathing, or only gasping, perform CPR.

Unresponsive and Breathing

Even if a person is breathing normally, a lack of responsiveness is still considered to be a life-threatening condition that requires immediate care.

There are a variety of things that can result in unresponsiveness, including medical conditions such as stroke or seizures, or external factors, such as alcohol or drug overdose. Regardless of the cause, the greatest treatment concern is the ability of the person to maintain a clear and open airway.

Positioning an uninjured, unresponsive person in the recovery position can help maintain and protect the airway. This position uses gravity to drain fluids from the mouth and keep the tongue from blocking the airway.

If an unresponsive person has been seriously injured, do not move the person unless fluids are collecting in the mouth and airway, or you are alone and need to leave to get help.

Frequently assess the breathing of anyone placed in a recovery position. The condition can quickly become worse and require additional care.

HAINES Position

This version of the recovery position is also described as the High Arm in Endangered Spine, or HAINES, position and can be used when someone is injured.

Unresponsive and Breathing — Recovery Position

Skill Sheet 6

Assess Person

- If safe, tap or squeeze shoulder. Ask loudly, "Are you okay?"

  No response!
- Have someone alert EMS and get an AED.
- Look quickly at face and chest for normal breathing.

Normal breathing present!

Prepare

- Extend arm nearest to you up alongside head.
- Bring far arm across chest and place back of hand against cheek.
- Grasp far leg just above knee and pull it up so foot is flat on ground.

Roll

- Grasp shoulder and hip and roll patient toward you. Roll in a single motion, keeping head, shoulders, and torso from twisting.
- Roll far enough for face to be angled forward.
- Position elbow and knee to stabilize head and body.

Suspected Injury

- If person has been seriously injured, do not move unless fluids are collecting in airway, or you are alone and need to leave to get help.
- During roll, make sure head ends up resting on extended arm and head, neck, and torso are inline.

Unresponsive and Not Breathing

When a person is unresponsive and does not appear to be breathing or is only gasping, she is considered to be in cardiac arrest and requires CPR. CPR restores some oxygen to the brain through a combination of chest compressions and rescue breaths.

Once you start CPR, do the best you can. A person without breathing or circulation cannot survive. Nothing you do can make the outcome worse.

It is unlikely a person will improve with CPR alone. However, if a person starts moving, or shows other obvious signs of life during CPR stop and check for normal breathing. If normal breathing is present, place the person in the recovery position and monitor breathing.

If you are unable or unwilling to give rescue breaths, perform compression-only CPR. Without interruption, provide ongoing compressions at a rate of at least one hundred times per minute until an AED is ready, another provider or EMS personnel take over, or you are too exhausted to continue. If others are available, switch compressors about every 2 minutes.

Special CPR Situations

- **Fluids in Airway** — Roll person on side to quickly drain fluids. Roll without twisting, like a log. Remove any material still in mouth with a gloved finger.
- **Cold Environments** — Handle cold people gently to prevent cardiac arrest. If body is solid, do not start CPR.
- **Drowning** — As quickly and safely as possible, get person onto solid ground. Expect vomiting. Do not attempt to expel water using abdominal thrusts.
- **Serious Injury** — Someone in cardiac arrest due to injury is unlikely to survive. If it is clear injury has caused arrest, do not start CPR.
- **Electric Shock/Lightning** — Approach only if it is safe. Electric shock can cause ventricular fibrillation. When safe, perform CPR and use an AED.
- **Neck Breather** — Provide rescue breaths through surgical opening, or stoma, in neck using CPR mask or shield.

Unresponsive and Not Breathing

Skill Sheet 7

Assess Person

- If safe, tap or squeeze shoulder. Ask loudly, "Are you okay?"

  No response!
- Have someone alert EMS and get an AED.
- Look quickly at face and chest for normal breathing.

Normal breathing absent!

Give 30 Compressions

- Place heel of one hand on center of chest. Place heel of second hand on top of first.
- Using upper body weight, push hard, at least 2 inches.
- Push fast, at least 100 times per minute. Allow chest to fully rebound.

Give 2 Rescue Breaths

- Tilt head; lift chin to establish airway.
- Make chest visibly rise with each breath, but no more.
- Take a fresh breath between breaths.

Repeat Cycles

- Provide continuous cycles of 30 compressions and 2 rescue breaths.
- If an AED becomes available, turn it on immediately and follow the AED's voice instructions.
- Continue until another provider or EMS personnel takes over, the person shows signs of life, or you are too tired.

Automated External Defibrillators

AEDs are designed to be simple to operate. Voice, lights, and screen instructions guide an operator in using the device. There are many different brands of AEDs, but the same basic steps for operation apply to all of them.

- Turn on the AED. This starts voice instructions and readies the device for use. Opening the lid will turn on the power with some AEDs. With others, a power button is pressed.
- Adhere the defibrillation pads to the person's bare chest. Pads are placed to direct the electrical shock through the heart. Most pads are pre-connected to the device, but some AEDs require you to plug in a connector.
- Allow the AED to analyze the heart rhythm. An AED automatically starts analyzing once the pads are in place. If defibrillation is required, the AED will charge to get ready for shock delivery.
- Safely deliver a shock if directed to by the AED. Keeping others clear, a button is pressed on most AEDs to deliver a shock. Immediately after a shock is delivered, CPR is resumed. Voice instructions and additional analysis by the AED will guide providers through further care.

Automatic Shock Delivery

Some AEDs deliver a shock automatically after charging. An accidental shock can be prevented by making sure no one is in contact with the person being defibrillated.

Basic AED Operation

If someone is unresponsive and not breathing, perform CPR until an AED is ready to analyze the heart rhythm. Defibrillation pads must be applied to a bare chest. If needed, quickly tear or use scissors to remove clothing, including undergarments. If the chest is wet or sweaty, wipe it dry with the removed shirt, a dressing, or a towel.

The pads have pictures on them to assist in proper placement. Carefully look at the pictures to ensure the pads are accurately placed. Pads use an adhesive to stick to the chest. Peel the pads from the backing sheet one at a time and place them exactly as indicated in the pictures.

AEDs automatically start analyzing once the pads are in place. Movement can interrupt the analysis. Be certain that no one is touching the person.

If defibrillation is required, an AED will charge to deliver a shock. A voice instruction will indicate when the AED is ready. To prevent accidental shock, keep others clear. Give a verbal warning and look to make sure no one, including you, is in contact with the person before delivering the shock.

AEDs

More and more employers are implementing AED programs in the workplace to improve survival from sudden cardiac arrest. In the community, public access AED programs are installing AEDs in public areas to be used by bystanders in an emergency.

CPR training should include training in the use of an AED, even if one is not currently available in your workplace.

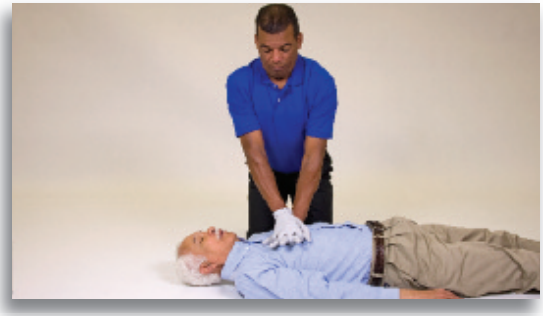
Immediately after delivering the shock, resume CPR, starting with chest compressions.

If the person responds, stop CPR and place him in a recovery position. Leave the AED on and attached in case cardiac arrest returns.

When a shock is not indicated by the AED, simply resume CPR, starting with chest compressions and continue to follow any voice instructions.

Using an AED

Skill Sheet 9



Perform CPR

- If person is unresponsive and not breathing, immediately perform CPR.
- Provide continuous cycles of 30 compressions and 2 rescue breaths.

When Available, Attach AED

- Turn on AED and bare chest.
- Peel first pad from backing and place below right collarbone, above nipple, and beside breastbone.
- Place second pad on left side, over ribs, and a few inches below armpit.

If Indicated, Deliver Shock

- Allow AED to analyze heart. Stop all movement.
- If shock is advised, CLEAR everyone and press button to deliver shock.
- If a shock is NOT advised, immediately resume CPR, starting with chest compressions.

Resume CPR

- Quickly resume CPR, starting with chest compressions. Follow any additional voice instructions from AED.
- Continue until another provider or EMS personnel take over.
- If person responds, stop CPR and place in recovery position. Leave AED on and attached.

Troubleshooting

AEDs are designed to detect problems during use and guide you through corrective actions. If a troubleshooting message occurs, stay calm and follow the AED's voice instructions.

If the AED indicates a problem with the pads, the pads are not completely adhered to the skin or there is a poor connection to the AED.

Press pads firmly, especially in the center, to make sure they are adhering well.

- Make sure the pads cable connector is firmly connected to the AED.
- If the chest is wet, remove pads and wipe the chest dry. If pads do not stick due to chest hair, pull the pads off and quickly shave the hair. Apply a new set of pads.

Another troubleshooting message may indicate that analysis has been interrupted due to movement. Stop all sources of movement, such as chest compressions or rescue breaths.

If a message indicates the need to replace a battery, there may only be enough energy for a limited number of shocks. If the AED fails to operate, the depleted battery should be removed and replaced with a new one.

Other Considerations

A person should be removed from standing water before an AED is used. It is okay to use an AED when a person is lying on a wet surface, such as in the rain or near a swimming pool. An AED should never be immersed in water or have fluids spilled on it.

AEDs can also be used safely on metal surfaces, such as gratings or stairwells. Make sure pads do not directly touch any metal surface.

Someone may have a surgically implanted device in the chest, such as a pacemaker or an automated internal defibrillator. A noticeable lump and surgical scar will be visible. If the implanted device is in the way of correct pad placement, place the pads so the edges are at least one inch away from the device.

Defibrillating over medication patches could reduce the effectiveness of the shock. If a medication patch is interfering with placement, use a gloved hand to peel off the patch and wipe away any remaining residue before placing pads.

Choking

Choking can occur when a solid foreign object, such as a piece of food or small object, enters a narrowed part of the airway and becomes stuck. On inhalation, the object can be drawn tighter into the airway and block air from entering the lungs. Your help is required to save the person's life.

A forceful thrust beneath the ribs and up into the diaphragm can compress the air in the chest and build enough pressure to "pop" the object out of the airway. Direct compression of the chest over the breastbone can also create enough pressure to expel an object.

You must be able to recognize the difference between a mild blockage and a severe blockage.

With a mild blockage, a person can speak, cough, or gag. This type of blockage is typically cleared by coughing. Encourage someone with a mild blockage to cough forcibly. Stay close and be ready to take action if things worsen.

When a severe blockage occurs, a person cannot dislodge the object on his own. Signs of severe obstruction include very little or no air exchange, lack of sound, and the inability to speak or cough forcefully. The person may hold his hands to his throat as he attempts to clear the obstruction.

Pregnant or Obese

When someone is clearly pregnant or obese, use chest thrusts instead of abdominal thrusts.

Self-Care

If you are alone, try pressing your abdomen quickly against a rigid surface, such as the back of a chair. If one is not available, attempt abdominal thrusts on yourself.

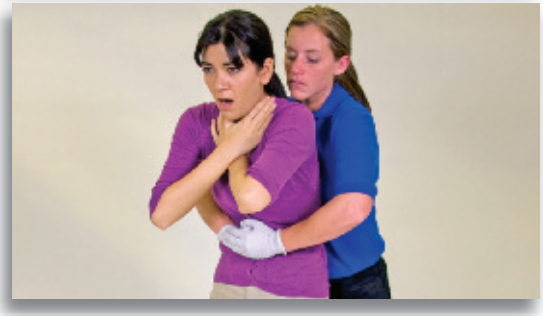
Choking
Skill Sheet 10

Assess Person

- Ask, “Are you choking?”
- If person nods yes, or is unable to speak or cough — act quickly!
- If available, have a bystander activate EMS.

Position Yourself

- Stand behind person. Reach around and locate navel.
- Make a fist with other hand and place thumb side against abdomen, just above navel and below ribs.
- Grasp fist with other hand.



Give Thrusts

- Quickly thrust inward and upward into abdomen.
- Repeat. Each thrust needs to be given with intent of expelling object.
- Continue until person can breathe normally.

If Person Becomes Unresponsive…

- Carefully lower to ground.
- If not already done, activate EMS.
- Begin CPR, starting with compressions.
- Look in mouth for an object before giving rescue breaths. Remove any object if seen.

Primary Assessment — Responsive Person

Just as with an unresponsive person, the primary assessment for someone who is responsive is to assess for and immediately treat life-threatening problems, including bleeding and shock.

If it is safe for you to approach, do so. Introduce yourself. Let the person know you are first aid trained and there to help. Check for confusion or disorientation.

Assess for any difficulty in breathing.

Scan the body for serious bleeding. If found, control it immediately.

Check the face for tissue color. Tissue color depends on the amount of blood circulating below the skin.

- Normal tissue color is light pink.
- Paleness can indicate blood loss or shock.
- A bluish color can indicate a lack of oxygen.

When checking a dark-skinned person for tissue color, assess the palms of the hands, fingernails, or inside the lip.

Assess skin temperature by touching the forehead with your bare wrist.

- Normal skin feels warm and dry.
- Cool, wet skin can be an indication of shock.

Quickly activate EMS and provide any primary care when a life-threatening medical condition is found or suspected.

Ongoing Assessment

Emergencies are dynamic events that can change at any time. Reassessment is the ongoing observation of an ill or injured person to monitor his or her condition and the effectiveness of first aid.

Make sure the situation remains safe for you to be there. Watch for changes in a person's level of responsiveness. Ensure the airway is open and clear and that the person is breathing normally. Reassess to ensure external bleeding is controlled. Look for changes in the person's tissue color or skin temperature. Check at regular intervals until another provider or EMS personnel take over.

Primary Assessment — Responsive Person

Skill Sheet 11

Assess Scene

- Pause and assess scene for safety.
- If unsafe, or if it becomes unsafe at any time, GET OUT!
- If safe, approach the person.

Introduce Yourself

- Let the person know you are first aid trained and there to help.
- Check for a diminished level of responsiveness.
- Assess for any difficulty in breathing.

Check for Bleeding

- Scan the body for any heavy bleeding.
- If found, control it immediately.

Check Tissue Color and Body Temperature

- Look at the face to check tissue color. When checking a dark-skinned person for tissue color, assess the palms of the hands, fingernails, or inside the lip.
- Touch the forehead with your bare wrist to assess body temperature.

Secondary Assessment

When a primary assessment indicates no life-threatening problems, complete a secondary assessment to gather additional information.

Quickly try to determine the person's chief complaint. Ask what happened. If she cannot answer, ask bystanders. The person may have a medical alert bracelet or necklace identifying a medical condition that could be related to the current problem.

The mechanism or forces that caused an injury may help predict the presence of a hidden injury. Clues in the environment, such as the temperature, or the presence of medications or containers, may help identify the cause of the chief complaint.

Physically assess the person. Briefly assess the body from head to toe, and look and feel for signs of illness and injury.

The DOTS acronym helps to remind you what to look for:

- **D**eformities
- **O**pen injuries
- **T**enderness
- **S**welling

If needed, remove or cut away clothing to get a better look at an affected body part. Compare one side of the body to the other. If at any time you suspect spinal injury, immediately provide spinal motion restriction by manually stabilizing the head.

Multiple Victims

When there are multiple people affected in an emergency, it is important to treat the most seriously ill or injured people first. Triage, a French word meaning "to sort," is used to describe the prioritization process. To complete triage quickly, prioritization is done in a logical manner:

- Immediate: Life-threatening problems that need immediate intervention
- Delayed: Serious injuries that need intervention, but can wait for it
- Minor: Injuries that may need intervention or be ok without it
- Deceased: No signs of life, obviously dead

Ask questions. Use the acronym **SAMPLE** to help you remember what to ask about.

- **S**ymptoms — Things the person is feeling, such as pain, nausea, dizziness, or anything related to the situation.
- **A**llergies — Things the person may be allergic to.
- **M**edications — Medications the person has been prescribed or is taking.
- **P**ast medical history — Medical problems that may be related to what is going on.
- **L**ast oral intake — When the person last ate or drank.
- **E**vents leading up to problem — What the person was doing just prior to the problem.

If you find or begin to suspect a life-threatening problem is occurring while performing a secondary assessment, stop, quickly activate EMS, and provide the primary care.

Mechanism of Injury

Suspect spinal injury if an injured person has any of the following risk factors:

- Age greater than 65 years
- Driver, passenger, or pedestrian in a motor vehicle, motorized cycle, or bicycle crash
- A fall from greater than standing height
- Tingling in the extremities
- Pain or tenderness in the neck or back
- Sensory loss or muscle weakness involving the torso or upper extremities
- Not fully alert or intoxicated
- Other painful injuries, especially of the head and neck
- Children 2 years of age or older with evidence of head or neck trauma

Secondary Assessment

Skill Sheet 12

Determine Chief Complaint

- Ask what happened. If person cannot answer, ask bystanders.
- Look for medical alert bracelet or necklace.
- Determine if any mechanism or force occurred that could have caused a serious injury.

Look at the Person

- Briefly check body from head to toe. Look and feel for signs of illness and injury (DOTS):
  - Deformities
  - Open injuries
  - Tenderness
  - Swelling

Ask Questions

- Ask questions related to what is going on (SAMPLE):
  - Symptoms?
  - Allergies?
  - Medications?
  - Past medical history?
  - Last oral intake?
  - Events?

Control of Bleeding

Blood vessels are present throughout the body. Bleeding occurs when tissues are damaged. Heavy bleeding is likely if a major blood vessel is damaged. Bleeding reduces the oxygen-carrying capacity of blood. If heavy or uncontrolled, bleeding can quickly become life threatening.

Arterial bleeding is bright red and will often spurt from a wound. It can be difficult to control due to the pressure created by the heart's contractions.

If the blood is dark red and flowing steadily, it is likely coming from a damaged vein. Bleeding from a vein can be heavy. Regardless of the source, all heavy bleeding must be controlled as soon as possible.

Clot-forming fibers naturally collect at a wound site to create a patch to stop bleeding. Severe bleeding can overwhelm this process and prevent clotting from occurring.

Activate EMS immediately for any heavy bleeding.

Bleeding exposes you, the provider, to potentially infectious body fluids. Always use protective barriers, such as disposable gloves, to protect both you and the injured person.

Continuous firm and direct pressure applied to a wound is the best method for controlling external bleeding.

When barriers are not available, an injured person can provide self-care or a provider can use improvised barriers, such as a plastic bag.

Control of Bleeding

Skill Sheet 13

Apply Direct Pressure

- Quickly expose and inspect wound.
- Using a clean, absorbent pad, apply direct pressure with flats of fingers directly on point of bleeding.
- If a pad is not available, apply direct pressure with just your gloved hand.

Apply Pressure Bandage

- Wrap a roller gauze or elastic bandage around limb and over injury to provide continuous pressure to wound.
- Include enough pressure to control bleeding.
- Avoid wrapping so tight that skin beyond bandage becomes cool to touch, bluish, or numb. Make sure a finger can be slipped under bandage.

If Bleeding Continues…

- If blood soaks through the pad, apply another pad, leaving the initial pad in place.
- Apply more pressure with the palm of your hand.
- When direct pressure is not effective at controlling bleeding from a limb, apply a tourniquet only as a last resort.

Internal Bleeding

A significant blow can create injury and bleeding inside the body. This is especially true for organs in the chest and abdomen. Internal bleeding can be difficult to detect. Suspect it if the chest or abdomen is hit hard.

Surgery may be the only way to control internal bleeding. Early suspicion and activation of EMS is critical for effective treatment, and possibly survival.

Managing Shock

Shock develops when poor blood flow creates a shortage of oxygen to body tissues. Any serious illness or injury has the potential to cause shock. If not treated early, shock can get worse and become life threatening.

Shock is progressive in nature. Early signs can be difficult to detect. A person may simply appear uneasy, restless, or worried.

Other more serious signs can emerge gradually over time. Responsiveness may diminish. The skin may become pale, cool, and sweaty.

A person in shock must get to a hospital as quickly as possible in order to survive. Early recognition, treatment, and activation of EMS are essential for survival.

To limit the effects of shock, help the body maintain adequate oxygen by:

- Ensuring an open and clear airway
- Ensuring normal breathing
- Controlling any external bleeding.
- If there is no difficulty in breathing, lay the person flat on the ground.
- Maintain a normal body temperature. Insulate on top and underneath with a blanket to prevent heat loss. Be careful not to overheat. If you suspect a head or back injury, do not move the person to put a blanket underneath. Tuck the blanket underneath as much as possible.
- Give nothing to eat or drink, even if the person asks for it. Keep the person as comfortable and calm as possible. Reassess regularly until another provider or EMS take over.

Head, Neck, or Back Injury

When the body suffers a significant force, such as from a high fall, shooting, or motor vehicle crash, serious injury can result, most notably to the spine. Injury to the spinal cord can result in temporary or permanent paralysis or in a life-threatening condition, such as the loss of breathing.

After the initial injury, movement of damaged spinal bones can result in additional injury to the spinal cord or surrounding tissue. This can result in permanent damage.

Quickly instruct a responsive person to remain still. Ask about how the injury occurred. Look for any obvious injury to the head, neck, or back. Ask about numbness, tingling, burning, or loss of sensation in the arms or legs. The lack of obvious injury does not mean that the spine is not injured. If a significant mechanism of injury occurred, it is best to assume a spinal injury exists.

The priority of care is to help prevent further injury by keeping the injured person still and using spinal motion restriction. Always make sure it is safe to provide care.

Establishing an airway for an unresponsive person is a higher priority than protecting suspected injury to the spine. Tilt the head and lift the chin when it is necessary to maintain an open airway or give rescue breaths. If you need to leave an unresponsive person with a suspected spinal injury alone to get help, place the person in a recovery position to protect the airway before you go.

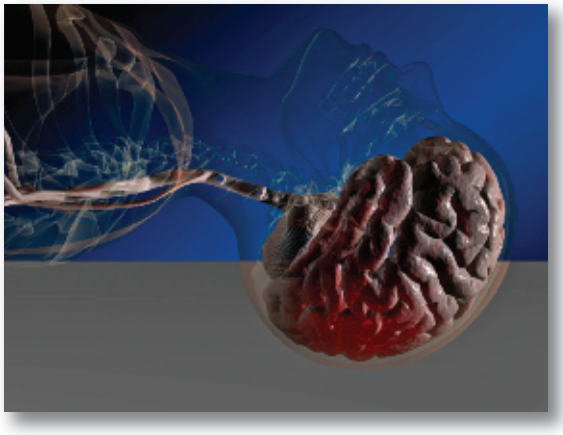
CAUTION!

Pain and loss of function usually accompany a spinal injury, but the absence of pain does not mean that the victim has not been significantly injured. If you suspect a victim could possibly have a spinal injury, assume they do!

Brain Injury

A significant blow or force to the head can result in internal injury to the brain and soft tissues within the skull. Swelling or bleeding from the injury can cause increasing pressure within the skull and damage the delicate brain tissue.

Suspect a brain injury when a blow to the head results in confusion or disorientation. Surgical intervention may be the only treatment. Activate EMS immediately and provide spinal motion restriction.



If a bleeding wound is present, place an absorbent pad directly over the area and carefully apply firm, continuous pressure. Do not try to stop the flow of blood or fluid from the ears or nose.

Closely monitor the person's level of responsiveness. If fluid accumulates in the mouth or vomiting occurs, roll the person onto his or her side to protect the airway.

If the person has a seizure, maintain spinal motion restriction and protect him or her from bumping into nearby objects. Do not restrain the person tightly and do not place anything in his or her mouth. Seizures generally last for just a few minutes.

Concussion

A blow or force to the head can cause a concussion or mild injury to the brain. This can result in problems with concentration, memory, judgment, balance, and coordination. The effects of most concussions are temporary and will resolve naturally.

Spinal Motion Restriction

Skill Sheet 14

Initial Considerations

- Make sure it is safe to provide care.
- Immediately encourage person to not move.
- Have a bystander activate EMS.

Stabilize Head

- Get into a comfortable position behind the person.
- Cup your hands on both sides of the head, without covering the ears, to manually stabilize head.
- Keep the head, neck, and spin in line. Minimize any motion.
- Comfort, calm, and reassure the person.

Protect Airway

- If fluids are collecting in mouth and airway, roll person onto side to drain.
- If you are alone and need to leave to get help, roll person into recovery position before you go.

Swollen, Painful, Deformed Limb

Bones, muscles, and joints give the body shape, allow movement, and protect vital internal organs. Long bones form the upper and lower parts of each limb. Muscles, ligaments, and tendons attach to the bones, allowing for movement where the bones come together at joints. These bones are the most exposed to external forces and injury.

There are four different types of injuries affecting bones, muscles, and joints:

- Strains are stretching or tearing injuries to muscles or tendons.
- Sprains are tearing injuries to ligaments that hold joints together.
- Dislocations are the separation of bone ends at a joint.
- Fractures are breaks in bones.

Distinguishing an injury to muscle or bone is often difficult. It is best to treat them all as possible fractures.

Common signs of these injuries include swelling, pain, and discoloration. The limb may appear deformed and the person may be guarding it by holding it against his body.

Unstable bones or joints can damage tissue, muscle, blood vessels, and nerves when moved.

Do not allow the person to use the injured limb. Movement can cause further injury.

An open wound may be present. If needed, expose the injury site by gently cutting or tearing away clothing. Cover an open wound with a clean absorbent pad and gently control bleeding with firm, continuous, direct pressure. Never push a bone back under the skin.

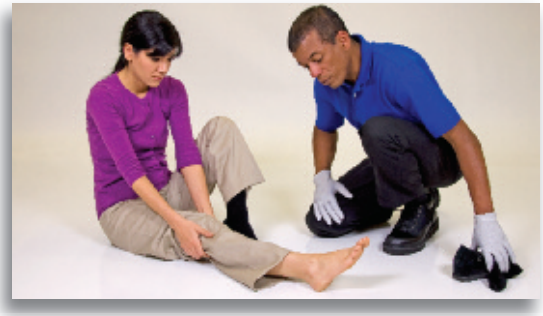
Splinting an injured limb can reduce pain and prevent further injury. In general, it is best to rely on EMS personnel to splint, as they have more extensive training, experience, and equipment.

Local Cooling

For many injuries, local cooling can help decrease bleeding, swelling, and pain. A plastic bag filled with a mixture of ice and water works best. Place a thin cloth between the bag and skin to prevent cold-related problems. Limit application to 20 minutes or less.

Swollen, Painful, Deformed, Limb

Skill Sheet 15



Expose Injury

- Encourage person not to move injured limb.
- Expose injury site to look for an open wound.

Cover Open Wounds

- Cover an open wound with a clean absorbent pad.
- Gently control bleeding with firm, continuous, direct pressure around bone or injury site.
- Never push an exposed bone back under skin.

Stabilize Limb

- Leave injured limb in position it was found.
- Use padding in gaps and holes underneath limb to provide a stable and comfortable spot for it to rest.
- If needed, place your hands above and below injury to manually stabilize limb.

Additional Considerations

- If injury seems serious, or you are not sure, activate EMS.
- Comfort, calm, and reassure person.
- Local cooling can help decrease bleeding, swelling, and pain.

Burns

Burns can inflict serious physical damage to the body. Typically caused by close exposure to high temperatures, chemical reactions, or electrical current, burns can vary in severity.

The larger the surface area burned, the greater the disruption of the skin's ability to properly maintain body temperature. The deeper a burn goes into the skin and underlying tissue, the more likely the risk of infection. Burns involving the face, hands, genitals, and feet can result in the limitation of basic functions, such as movement and sensation.

Breathing air at high temperatures can create burns within the airway and result in serious breathing difficulty.

Minor Burns

Minor burns include those that involve the outer layer of the skin and result in redness and pain. These include small burns that extend into the deeper layers of the skin and cause some blistering.

Rapid first aid treatment for these burns can provide immediate comfort and help prevent long-term complications. Cool the burn with cool water as soon as possible. Continue cooling until the pain is relieved. This will reduce pain, swelling, and the depth of injury. Do not apply ice directly to cool a burn.

Leave any blisters intact. Cover the burn with a loose sterile pad. Minor burns usually heal without further treatment.

Critical Burns

Deep burns over a large area of the body are the most severe. These burns often result in extensive blistering and destruction of skin tissue.

Make sure the situation is safe for you to help. If someone is on fire, tell him to stop, drop, and roll. Try to smother the flames with a coat, rug, or blanket, or douse him with water.

Activate EMS immediately. Expose the affected area by cutting or tearing away clothing. If any clothing is stuck to the burn, do not remove it. If present, remove any jewelry near the burned area.

Separate fingers or toes with dry, sterile, non-adhesive dressings. Do not apply butter, ointment, lotion, or antiseptic. Loosely cover the burn area with a dry, clean pad or clean sheet, if the burned area is large.

Give the person nothing to eat or drink. While awaiting EMS, monitor the airway for swelling from inhalation of smoke or hot gases.

Chemical Burns

Some chemicals can react and damage skin tissue on contact. The immediate care is to dilute and remove the chemical quickly to minimize the damage.

Brush off any dry powder with a gloved hand or cloth. Remove any contaminated clothing. Flood the affected area with large amounts of water, unless the chemical is known to react with water. Continue to flush with water until the burning sensation stops.

Cover any visible burns loosely with a dry, clean pad and seek further medical attention.

Electrical Burns

Electrical burns are caused by contact with electrical wires, current, or lightning.

Be safe! Turn the power off before touching the affected person. If you cannot make it safe, do not attempt care.

An electric shock can cause an abnormal heart rhythm in which the heart stops. If this occurs, activate EMS and have someone get an AED if one is available. Perform CPR until an AED is ready, another provider or EMS personnel take over, or you are too tired to continue.

If the person is responsive, thermal burns may be present at the places the current entered and exited the body.

Internal injury from an electric shock is often more severe than might be suspected. Always seek professional medical care, since the extent of injury may not be apparent.

CAUTION!

Consider any fallen or broken wire extremely dangerous. Do not touch (or allow your clothing to touch) a wire, victim, or vehicle that is possibly energized. Do not approach within 8 feet of it. Notify the local utility and have trained personnel sent to scene. NEVER attempt to handle wires yourself unless you are properly trained and equipped.

Warning Signs of Sudden Illness

Medical conditions and illnesses can suddenly trigger an unexpected medical emergency. Suspect a serious illness when, without warning, a person suddenly appears weak, ill, or in severe pain.

In many cases, the human body displays warning signs to alert us to serious illness. The most common warning signs of serious illness are:

- Altered mental status
- Breathing difficulty or shortness of breath
- Pain, severe pressure, or discomfort in the chest
- Severe abdominal pain

Altered Mental Status

Caused by a number of medical conditions, an altered mental status is a significant or unusual change in a person's personality, behavior, or consciousness. It is an indication of a change in brain function.

Regardless of the cause, an altered mental status is a warning sign of a serious problem and is considered a medical emergency.

Activate EMS. Position the person for comfort. Calm and reassure the person as best you can.

If the person's level of responsiveness is or becomes severely diminished, consider placing the person in a recovery position to protect the airway. Reassess regularly until another provider or EMS personnel take over.

Fainting

Fainting is the result of a drop in blood flow to the brain, usually due to a reaction to sudden stress, lack of food or water, or prolonged standing in place. A person suddenly becomes lightheaded or dizzy and may collapse. In most cases, the effects are temporary and not serious.

Lay the person flat. If there is no evidence of injury, raise the feet about 6 to 12 inches. If not possible, sit the person forward and place his head between his knees. Keep the person still and quiet until he or she feels better.

Stroke

A stroke, or brain attack, occurs when the blood supply to a portion of the brain is suddenly interrupted. This most commonly occurs when a blood clot gets caught in a blood vessel. A stroke can also occur when a weak spot in the wall of a blood vessel, known as an aneurysm, bursts open and bleeds into the surrounding brain tissue. In both cases, brain cells die.

Signs of a stroke can vary. They tend to show up suddenly.

- Numbness or weakness of the face, arm, or leg, especially on one side of the body, may be present.
- A person may appear confused.
- A change in the ability to speak or understand can occur.
- Sight and balance can be affected, and,
- A severe, sudden headache may be described.

A stroke is a true medical emergency. Activate EMS immediately if a stroke is suspected. Rapid treatment in a hospital is critical to limiting the damage that can occur.

A person experiencing a stroke can become frustrated at being unable to move or communicate clearly. The person may appear confused but still be aware of what is happening. Calm, comfort, and reassure the person until another provider or EMS personnel take over. Do not give anything to eat or drink.

Stroke Assessment

A quick method to determine if someone could be suffering from a stroke is to ask the person to:

- Smile
- Hold up both arms
- Speak a simple sentence

If the person has trouble with any of these tasks, a stroke may have occurred.

Whenever a stroke is suspected, be prepared for the possibility of sudden cardiac arrest and the need for CPR and the use of an AED.

Diabetic Emergencies

Diabetes is a disease in which the body cannot effectively use sugar for energy. A diabetic emergency can occur when the amount of sugar in the blood becomes very high or very low.

Suspect the possibility of a diabetic emergency with anyone who has a gradual change in mental status. The skin may be pale, cool, and sweaty. You may also notice a sweet or fruity smell in the person's breath.

If a person is diabetic, there may be evidence of the condition. Ask others about the person's medical history or medications he or she may be taking. Look for a medical alert bracelet or necklace identifying the condition.

If you know the person is diabetic, determine his or her level of response and ability to swallow. If the person has a diminished level of responsiveness and has difficulty swallowing, activate EMS. Do not give anything to eat or drink.

If the person is responsive and able to swallow without difficulty, give sweet juice, candy, or any sweet substance containing sugar. If the person has oral glucose gel, use that instead. Do not use anything with an artificial sweetener.

Calm, comfort, and reassure the person. If he or she responds to the sugar, his or her mental status will gradually improve. If there is no response to sugar within about 15 minutes or the condition worsens, activate EMS. Reassess regularly until another provider or EMS personnel take over.

It is important to note that insulin is not considered an emergency medication. It is **never** appropriate to administer insulin to a diabetic person in an emergency setting.

Seizure

Seizures are triggered by excessive electrical activity within the brain. The result is uncontrolled muscle convulsions throughout the body.

Generally, seizures happen without warning. Jerking movements of the body occur and breathing may seem absent. The person can lose control of his or her bowel or bladder, and may vomit.

While there are many things that can cause a seizure to occur, the care provided is always the same. Protect the person during the seizure. Move objects away that he may bump in to. Do not restrain the person. Allow the seizure to take its course.

Do not put anything in the mouth, including your finger. There is no danger of the tongue being swallowed.

Activate EMS if the person:

- Is injured during the seizure
- Has no history of seizure
- Continues to seize for more than 10 minutes

Most seizures last only a short time, and stop without any special treatment. If response and breathing are absent after a seizure stops, begin CPR and get an AED if one is available.

Once a seizure stops, it is normal for responsiveness to improve slowly over time. Provide continual reassurance as the person improves. Provide privacy to minimize embarrassment. Continue to monitor until the person returns to normal.

Breathing Difficulty, Shortness of Breath

Breathing difficulty or shortness of breath is a medical emergency. It is generally caused by an underlying medical illness such as asthma, allergic reaction, heart failure, or lung disease.

At rest, normal breathing is regular and effortless. You may first suspect difficulty when there is a noticeable increase in the effort required to breathe and the rate at which breaths are occurring. Unusual breathing sounds may occur. A bluish-purple tissue color, especially in the lips or fingers, indicates a developing lack of oxygen and is a serious sign.

Do not wait to see if a person's condition will improve. Activate EMS without delay. If an AED is available, have someone get it. Allow the person to find the most comfortable position in which to breathe. Loosen any tight clothing. Calm, comfort, and reassure the person until another provider or EMS personnel take over.

Breathing difficulty can quickly become life threatening as a person becomes exhausted from the breathing effort. Be prepared to provide CPR and attach an AED if the person’s condition worsens.

Asthma

Asthma, or reactive airway disease, affects the small air passages in the lungs. Irritants can trigger a reaction that results in narrowed passages due to swelling and the production of mucus. Airflow into and out of the lungs is restricted.

Asthma symptoms can vary from mild to life threatening.

Quick relief medications that work fast to control asthma symptoms are available. If the person has a prescribed inhaler for asthma, assist her in using it. If the person does not improve within 15–20 minutes, activate EMS.

Assisting with Medication

State laws and regulations may prescribe specific practices, rules, and standards for assisting another person with prescribed medication. Be aware of the regulations in your local area.

Severe Allergic Reaction

A severe allergic reaction, or anaphylaxis, is an extreme response of the body's immune system to something it is very sensitive to. Common things that can initiate a severe reaction include bee stings, peanuts, latex, and penicillin.

When anaphylaxis occurs, the airway becomes constricted due to swelling of the throat, making it difficult to breath. Wheezing may be heard. Swelling of the lips, eyelids, and face may occur. Itchy raised lumps, or hives, can appear on the face and chest. The person may complain of nausea and abdominal cramping.

A reaction can develop rapidly. In general, the faster the reaction occurs, the more severe it is. Without treatment, death can occur within 15 minutes.[iv]

Activate EMS. Allow the person to find the most comfortable position in which to breathe. Loosen any tight clothing. Calm, comfort, and reassure the person.

A person with a history of allergic reactions may carry a prescribed epinephrine auto-injector. Epinephrine can quickly reverse the effects of the reaction and may be lifesaving. If the person has an auto-injector available, assist the person in using it on himself.

Reassess regularly until another provider or EMS personnel take over.

Pain, Severe Pressure, or Discomfort in the Chest

Acute coronary syndrome, or ACS, occurs when there is reduced blood flow to the tissues of the heart. Often described as a heart attack, ACS is a serious condition that can result in significant damage to the heart.

Someone with ACS will generally experience pain, severe pressure, or discomfort in the chest. Women often do not experience these signs and will describe indigestion, weakness, or fatigue. Shortness of breath, nausea, and lightheadedness can also occur. The person's skin may be pale, cool, and sweaty.

A person who has had previous heart problems is at risk for recurrence. Ask the person or any bystanders about prior problems or medications being taken.

Activate EMS immediately, even if the person does not want you to. If an AED is available, have someone get it and keep it nearby. Do not try to transport the person to a hospital yourself.

Allow the person to find the most comfortable position in which to breathe.

Loosen tight clothing. Calm, comfort, and reassure the person.

A person who is having a heart attack may deny it. This is a common occurrence in ACS. Accept it, but never let this alter your approach to care.

Someone with a heart condition may carry a prescribed medication known as nitroglycerin. Assist the person in taking it.

Aspirin can be lifesaving for a person having a heart attack. While waiting for EMS providers to arrive, encourage the person to chew one non-coated adult (325 mg) or two low-dose (81 mg) "baby" aspirin. Do not encourage aspirin use if the person has an allergy to aspirin, evidence of a stroke, or a recent bleeding problem.

Whenever a heart attack is suspected, be prepared for the possibility of sudden cardiac arrest, and the need for CPR and the use of an AED. Continue to reassure the person until another provider or EMS personnel take over.

Heart Disease

Heart disease, through heart attacks and strokes, is the leading cause of death for men and women in the United States. Statistics indicate more than one in four deaths was related to heart disease; half of the deaths were women.

A healthy lifestyle can lower the risk of heart disease:

- Follow a healthy diet to prevent or reduce high blood pressure and high blood cholesterol
- Maintain a healthy weight
- Control alcohol intake
- Don't smoke
- Exercise regularly

Severe Abdominal Pain

Severe abdominal pain can be a warning sign of serious illness, especially if it appears suddenly or is a new experience for the patient.

There are a number of important organs in the abdomen. Depending on the body systems involved, many serious problems can occur and cause pain. Early recognition and rapid transport to a hospital may help to prevent the development of a life-threatening condition.

A person complaining of severe abdominal pain will typically try to find a position of comfort to relieve the pain. The abdomen may be rigid and tender to the touch. The person may become nauseated and vomit. The person may describe a recent blunt blow to the abdomen or may be pregnant.

Activate EMS. Allow the person to find the most comfortable position possible. Reassure the person and keep her as calm as possible. Do not give anything to eat or drink. Reassess regularly until another provider or EMS personnel take over.

Ingested Poisoning

Any substance that can enter the body and create a harmful disturbance or reaction in the body can be described as a poison.

By far, poisoning most often occurs by ingestion. Children under six years old account for over half of all poisonings. Most poisoning deaths in children are accidental, while most deaths in adults are intentional. Common ingested poisons include pain medications, personal care products, and household cleaning products.[v]

The effects of ingested poisons are wide-ranging and often resemble those of common illnesses. Abdominal pain or cramping, nausea, and vomiting may occur. A person may also have an altered mental status. Often, the ingestion is described by the person. Open and empty containers, unusual smells, and odd staining on clothes, skin, or lips may be present.

If you suspect a person has ingested something poisonous, act quickly. Activate EMS if the person is displaying any serious signs or symptoms. Keep the person still. Calm, comfort, and reassure.

In the United States, calling the **National Poison Help Hotline at 1-800-222-1222** automatically transfers you to a regional poison control center. Poison centers can quickly provide information regarding the immediate treatment of any substance.

You can help EMS providers and the poison center by clearly identifying the substance and providing details about the incident. Save any vomit, bottles, or containers for EMS.

Do not induce vomiting, or give water, milk, activated charcoal, or syrup of ipecac to the person unless you are advised to do so by the poison control center or EMS.

Reassess the person regularly until another provider or EMS personnel take over.

Inhaled Poisoning

Inhaled poisoning occurs when a harmful substance is breathed in. Common inhaled poisons include carbon monoxide from smoke or engine exhaust, natural gas, solvent fumes, and chemical vapors.

A person may complain of a headache, nausea, dizziness, and difficulty breathing. An altered mental status can occur. Suspect inhaled poisoning whenever someone is working in an enclosed space and he or she is feeling ill.

Make sure it is safe for you to help. If you can do so without risk to yourself, immediately move the person to fresh air. Allow the person to find a comfortable position.

Activate EMS if the person is displaying any serious signs or symptoms. Call the **National Poison Help Hotline at 1-800-222-1222** for additional directions on care. Help identify the substance and provide details about the incident.

Reassess regularly until another provider or EMS personnel take over.

Poisonous Plants

Direct skin contact with plants such as poison oak, poison sumac, and poison ivy can cause problematic skin reactions. Usually occurring within hours or days of exposure, these reactions result in itchy, red skin rashes with open sores.

If you have been exposed, you may be able to prevent a reaction by washing the affected area with soap and water as soon as possible to remove the oily plant resin. Carefully handle and wash any clothes or tools that may have been exposed.

If a minor reaction occurs, commercial relief products are available to ease symptoms. Seek medical attention if the reaction seems serious.

Alcohol, Drugs, and Medications

The use, or overuse, of alcohol, drugs, or medications can result in serious life-threatening problems. A diminished mental status can result in the loss of an airway. Breathing can become depressed and stop. Vomiting can occur.

In quantity, these things can become toxic or poisonous and result in internal damage to body organs and functions. Treat as with any other suspected ingested poisoning. Call the National Poison Help Hotline at 1-800-222-1222 for treatment recommendations.

Heat Exhaustion

Heat-related problems occur when the body's normal temperature-reducing mechanisms get overwhelmed, especially during vigorous physical activity, and become inefficient or stop working.

An active body creates heat. When it is exposed to hot, humid temperatures, sweating occurs to evaporate and cool the body. Heat exhaustion can develop from the combination of an increased internal temperature and the excessive loss of fluids to the environment, typically from sweating.

Signs include heavy sweating and pale, cool skin. The person may become nauseated and vomit. He or she may complain of a headache or dizziness, and feel weak.

Although it may not appear serious, treat suspected heat exhaustion without delay. Without immediate treatment it could progress to heat stroke, a life-threatening condition.

Stop the person from their activity and move him or her to a cooler place. Loosen or remove excess clothing. Have the person lie down and raise the legs six to twelve inches. Spray water or apply cool, wet cloths to head and torso. Use a fan to speed evaporation.

Encourage the person to drink cool fluids, preferably a sports drink with carbohydrates and electrolytes. If the person does not improve or seems to get worse, activate EMS.

Heat Cramps

Heat cramps are uncontrollable muscle spasms that can affect the calves, arms, abdominal muscles, and back. They can occur suddenly and be very painful.

Manage cramps by stopping activity, moving the person to a cooler location, and drinking water or a sports drink. Stretching and direct pressure to the cramping muscle may help. Delay further activity until the cramping has been resolved.

Heat Stroke

Heat stroke is a true life-threatening medical emergency. It can occur due to overexertion in a hot humid environment or as the result of a breakdown in the body's ability to shed heat. If body temperature rises significantly, it can quickly cause permanent damage to sensitive organs, including the brain and spinal cord.

In addition to the signs of heat exhaustion, a person with heat stroke will have an altered mental status. The skin can become red, very warm, or even hot, and be completely dry. Heavy sweating could be present, especially when exertion is the cause. The person may collapse and have a seizure.

Activate EMS immediately. Begin aggressive cooling with the resources available.

Spray or pour water on the victim and fan him. Apply ice packs to the person's neck, groin, and armpits. Cover the victim with a wet sheet and continue to fan. The best method, when possible, is to immerse the person in cool water up to his neck.

If the person is unresponsive, place him on his side in the recovery position to protect the airway. Do not force the person to drink fluids. Never give an unresponsive person anything by mouth.

Provide continuous cooling until EMS arrives. With early recognition and immediate cooling, the survival rate approaches 90%.[vi]

Hypothermia

Cold, wet temperatures can result in a lowering of the internal body temperature. Hypothermia and frostbite are the most dangerous cold-related conditions.

Hypothermia, a generalized cooling of the body, occurs when the internal core body temperature has decreased to 95° F or less. It is a life-threatening condition.

Body processes become impaired and eventually fail. Cardiac arrest may occur. To help recognize hypothermia, look for signs such as:

- Pale, cold skin
- Uncontrollable shivering
- Loss of coordination
- Difficulty speaking
- An altered mental status

Severe hypothermia can result in the loss of shivering and a slowing of the breathing and heart rate.

To care for the person:

- Carefully and gently move him to a warmer place
- Remove wet clothing
- Cover the person with something dry and warm
- Cover his head and neck to retain body heat

If available, activate EMS and get an AED if one is available. Be prepared to perform CPR and use the AED.

If you are far from professional medical care, begin actively rewarming the person. Place him near a heat source. Put containers of warm, but not hot, water in contact with the person's skin.

It is best to recognize and treat hypothermia early. The chance for survival decreases as the condition progresses.

Frostbite

Frostbite develops when skin freezes. Body parts that are exposed to extreme cold, such as fingers, toes, earlobes, cheeks, and nose, are the most likely to be affected.

Early signs of developing frostbite include a pins-and-needles sensation and throbbing. Later signs include a loss of feeling in the affected part and firm, pale, cold, numb skin.

Minor frostbite can be treated with simple rewarming using skin-to-skin contact, such as a warm hand.

If more serious, quickly get the person to a warmer place. Remove wet clothing. If available, activate EMS.

When EMS is available, or there is any chance that the part may refreeze, do not try to rewarm the frostbitten area.

Remove any jewelry from the affected areas. Place clean pads between frostbitten fingers and toes. Wrap the affected part with a clean towel or pad. Do not rub or massage the affected area or disturb blisters on frostbitten skin. Never give the victim alcoholic beverages. They do not help and may be harmful.

Calm, comfort, and reassure the person until EMS providers arrive.

If you are far from professional medical care, and there is no chance refreezing will occur, rewarm the affected part yourself.

Immerse the frostbitten area in warm water for 20–30 minutes. The water should be warm, not hot — just above normal body temperature. Check and maintain the water temperature often. Severe burning pain, swelling, blistering, and color changes may occur.

Do not use chemical warmers directly on frostbitten tissue because they can cause burns. Do not let the person use the affected part after it is thawed. Get the person to professional medical care as soon as you are able to.

Emergency Moves

It is best not to move an ill or injured person unless he or she is clearly endangered or requires life-supporting care. The greatest concern in moving a seriously injured person is the chance of making a spinal injury worse.

If you decide it is necessary to move someone, the most effective move to use is a drag. When using a drag, pull in the direction of the long axis of the body to keep the spine in line. Never pull on a person's head or pull their body sideways.

Common drags include the extremity drag, performed by grasping and pulling on the ankles or forearms; the clothing drag, performed by pulling on a person's shirt in the neck and shoulder area; and the blanket drag, performed by rolling a person onto a blanket and dragging the blanket.

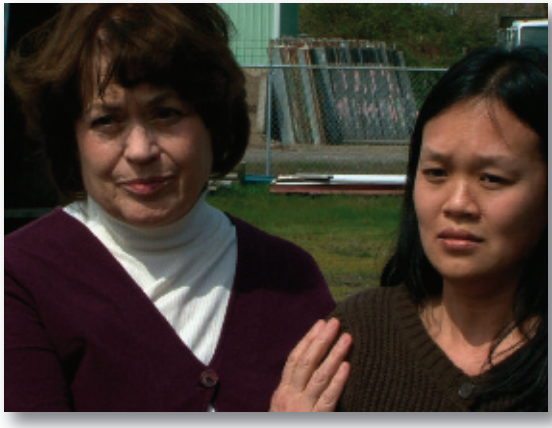
When moving someone, use your legs, not your back, and keep the person as close to your body as possible. Avoid twisting. Consider the person's weight. Know your physical ability and respect your limitations.

Vehicle fires in traffic crashes are relatively rare. Bystanders have dragged injured people from vehicles in the mistaken belief that the vehicle will catch fire and explode. Moving a person when it is not necessary can make injuries worse. Avoid moving an injured person from a damaged vehicle unless you believe his or her life is clearly in danger.

Emotional Considerations

Caring for someone in an emergency can create emotional distress. More serious problems or relationships with those involved can intensify these feelings. Common reactions include:

- Anxiety
- Trembling or shaking
- Sweating
- Nausea
- Fast breathing
- Pounding heartbeat



This is a normal human reaction to a traumatic event. Simply remember to stay calm and accept your limitations as a provider.

When an emergency is over, a provider is often left alone while an ill or injured person is transported away by EMS. With little time for closure, you can begin to experience a variety of reactions. These include:

- Feeling abandoned or helpless
- Recalling the event over and over
- Self-doubt about not doing enough
- Difficulty concentrating
- Heaviness in the chest
- Upset stomach or diarrhea
- Difficulty sleeping or nightmares

It is important to understand that these feelings are normal and should pass with time. However, there are actions you can take to help cope with and work through the difficulty.

Informally speak to someone you trust to listen without judgment, such as a family member, friend, or coworker. Get back to a normal routine as soon as possible. Accept that it will take time to resolve these emotions.

If unpleasant feelings persist, formal assistance from a professional counselor may be helpful as you work through your emotions about the event.

Caring for Specific First Aid Problems

Your training so far has focused on the recognition and general treatment for the most serious medical problems that can occur. Early bystander first aid care is an important factor in improving survival and recovery from these problems.

In comparison, bystander care is not as critical in the detailed treatment of specific problems, especially when an effective EMS system is in place.

However, first aid providers in locations with longer EMS response times or environments that pose a higher risk of specific medical problems may benefit from additional training.

Depending on your situation, your Instructor may elect to cover one or more of the following specific first aid problems in class. If not, they are included on the following pages for your later review.

Amputation

Amputation is the complete loss of a body part. If an amputation has occurred, quickly assess for and control any severe bleeding. Activate EMS. Calm, comfort and reassure the person. Treat for shock.

Amputated body parts can often be surgically reattached. Once the person is stable, locate the severed part. Wrap it in a sterile or clean cloth. Place the part in a tightly sealed plastic bag or waterproof container. Place the bag or container on ice.

Do not soak the severed part in water, and do not put it directly on ice. Give it to EMS providers for transport with the person to the hospital.

Impaled Object

An impaled object is an object that penetrates a body part and remains embedded.

As a general rule, never remove an impaled object. It can act like a plug and prevent serious blood loss. An impaled object can also be embedded into body structures below the skin. Movement of the object, or the body part it is in, could create additional injury.

If you suspect impalement has occurred, remove or cut away clothing to confirm the object has penetrated the skin. Look for any serious bleeding.

Keep the person still to prevent movement. Activate EMS for any significant impaled object or if you are in doubt about its severity. If the injury is bleeding, use a clean pad to apply direct pressure around the base of the object to control it. Use additional padding to stabilize the object.

If needed, support the person's weight to relieve pressure on the object. Use padding to provide stability and comfort.

Reassure the person to keep him or her calm. Treat for shock. Reassess the person and the injury regularly until EMS arrives.

Splinter

Splinters are small, sharp pieces of foreign material that become embedded in the skin. They need to be removed to keep a wound from becoming inflamed or infected.

Most splinters can be easily treated. If there is a protruding end, use tweezers to grab the splinter and pull it out in the direction it entered. If the end of the splinter is not protruding, use a small needle to loosen the skin around it. Once you can grasp the splinter with tweezers, pull it out in the direction it entered.

If a splinter is deeply embedded or you have only been able to remove a piece of it, seek professional medical care.

Open Chest Injury

Expansion of the chest during breathing causes suction, which pulls outside air containing oxygen through the airway and into the lungs. A puncture injury through the chest wall can disrupt this ability to draw air into the lungs.

If you suspect an injury has penetrated the chest wall, remove clothing to expose the injury site. Check to see if there is an exit injury on the other side of the chest. If there are two wounds, treat the more serious one first.

Air movement through the wound can be indicated by foamy, bloody air bubbles. You may hear a sucking sound. Quickly cover the wound with something airtight. You can start with a gloved hand. Activate EMS.

Consider covering the wound with an airtight dressing using material such as plastic wrap or aluminum foil. The covering should be wide enough to extend two inches or more past the edges of the wound in all directions. If tape is available, tape three sides of the covering to the chest wall. Leave one corner of the material un-taped. This will allow trapped air to escape.

If possible, allow the person to assume a position he or she is most comfortable in. Treat for shock. Regularly assess the person and the injury until EMS arrives.

Open Abdominal Injury

Injury to the abdomen may result in a condition known as evisceration, in which abdominal organs protrude through an open wound. It is important to understand that these are functioning organs and the primary treatment is to protect them from further injury.

If an open injury through the abdomen has occurred, activate EMS. Cover any protruding organs with a thick, moist dressing. Do not push the organs back inside the body.

Do not apply direct pressure on the wound or exposed internal parts, as this could cause further injury. Treat for shock. Regularly assess the person and the injury until EMS personnel arrive.

Impaled Object in the Eye

Objects that penetrate the surface of the eye require immediate professional medical care. Foreign bodies propelled at high speed present the highest risk.[vii]

Activate EMS. Immediate care requires stabilization of the object and reducing additional injury. Do not allow the person to rub the eye. Never try to remove an embedded object.

For small objects, cover both eyes with loose pads. Eyes move together. Covering both eyes prevents movement of the affected eye.

Stabilize larger objects with a bulky, clean pad. Cover the uninjured eye with a loose pad.

Covering both eyes can be frightening. Stay with the person and calm, comfort, and reassure him or her to help reduce anxiety. Regularly assess the person until EMS arrives.

Irritated Eyes

Small foreign objects on the surface of an eye will cause irritation and discomfort.

Encourage the person not to rub the affected eye. Have the person blink several times to see if the eyelid or tearing can remove the object naturally. If not, flush the eye with tap water or saline eyewash solution. Flush outward from the nose side of the eye.

If pain continues or the person feels like something is still in the eye, cover the eye lightly with a gauze pad and seek professional medical care. If the person has been exposed to flying metal fragments (hammering, grinding, etc.), do not attempt removal. Seek professional medical care immediately.

Chemicals in the Eye

Corrosive chemicals splashed into an eye can quickly damage eye tissue.

Getting a corrosive chemical in the eye is painful. Affected eyes will appear red and watery.

To minimize damage, immediately flood the eye with large amounts of water. Hold the eye open and flush continuously for at least 15–30 minutes. Flush outward from the nose side of the affected eye to prevent contamination of the unaffected eye.

If the person is wearing contact lenses and the lenses did not flush out from the running water, have the person try to remove the contacts after the flushing procedure.

Chemical burns to the eye require professional medical care. Activate EMS as quickly as possible.

In factories, laboratories, and other occupational settings where there is a known or increased risk for chemical eye burns, specialized therapeutic rinsing solutions that have been properly tested and approved may be available. Follow the established policy and manufacturer's directions for use.

Nosebleed

Nosebleeds can occur when small blood vessels inside the nostrils are ruptured. Most nosebleeds are not serious and can be easily handled. Rarely does a nosebleed become life threatening.

To care for someone with a nosebleed, have the person sit up straight with his or her head tilted forward, chin down. Pinch the nose with your thumb and index finger and hold it for about 10 minutes.

Do not tilt the head back or have the person lie down. These actions may cause him or her to swallow blood and vomit. Have the person spit out any blood that collects in his or her mouth.

If you cannot stop the bleeding, seek immediate medical attention.

Injured Tooth

A physical blow to the mouth can break, dislocate, or knock out teeth.

Control any bleeding. Have the person gently bite down on an absorbent pad. The application of ice may help to reduce bleeding, swelling, and pain. If the tooth is still in place, get the person to a dentist without delay.

If the tooth has been knocked out, early care can increase the chance that a permanent tooth can be successfully re-implanted. Handle the tooth only by the chewing surface, called the crown. Do not touch the root, the part of the tooth that embeds in the gum.

Gently rinse the tooth with water if it is dirty. Never scrub the tooth or remove any attached tissue fragments. If possible, place the tooth back in the tooth socket. If not, keep the tooth moist. Have the person spit into a cup and place the tooth in the saliva. Milk, contact lens solutions, or commercial sports drinks can also be used. Avoid using water.

Get the person to a dentist as quickly as possible, preferably within 30 minutes. The faster you act, the better the chance of saving the tooth.

Pregnancy Complications

Vaginal bleeding may occur during pregnancy. Light, irregular discharges of blood, or spotting, is normal. However, significant bleeding, especially late in the pregnancy, indicates a more serious problem may be occurring.

Severe abdominal cramping and pain can occur. Her skin may be cool, clammy to the touch, and pale in color. She may be weak and lightheaded.

Activate EMS immediately. Help her lay down on her left side. When lying face up, the baby puts pressure on a major vein that returns blood to the heart. Laying the mother on her left side improves blood flow to the mother and baby.

Have her place a sanitary pad over the vaginal opening. Do not have her insert anything inside the vagina. Treat for shock. Maintain a normal body temperature. Insulate on top and underneath to prevent heat loss. Calm, comfort, and reassure her. Do not give her anything to eat or drink.

Reassess regularly until another provider or EMS personnel take over.

Bites and Stings

Bites and stings can occur from a wide variety of insects, reptiles, animals, and even humans. Most are not serious and cause only minor swelling, redness, pain, and itching.

In general, care for bites and stings by washing the site with soap and water. As a precaution, always remove jewelry from the affected area. Apply an antibiotic ointment and cover the area with an adhesive bandage or a pad. Except for snakebites, use local cooling to reduce swelling and pain.

Some bites and stings are more serious and can benefit from first aid care. This is especially true for individuals who are very young or old, or have existing medical issues. Venomous bites and stings inject venom, or poison, into the body. Focus on slowing the absorption of venom into the body and quickly activating the EMS system for specialized treatment.

Snakebites

Pit Vipers

Venomous pit vipers, such as cottonmouths, copperheads, and rattlesnakes strike once and leave a characteristic bite with single or double fang marks. Pit viper bites can cause an intense, burning pain and local swelling. Swelling may involve the entire limb within hours.

If you suspect a pit viper bite, have the person sit still and activate EMS. Control any bleeding with a clean pad and direct pressure. Immobilize the injured part and keep it below heart level.

Coral Snake

A venomous coral snake bite is different than one from a pit viper. Coral snakes "chew" with fixed fangs. Pain and swelling at the bite site may be minimal or absent. Serious effects are often delayed and can include abdominal pain, nausea and vomiting, rapid heartbeat, difficulty breathing, drooling, and an altered mental state.

If you suspect a coral snake bite, activate EMS and have the person sit still. To slow venom spread, apply a pressure bandage around the entire length of the bitten extremity. Wrap towards the body. The bandage should be snug, but not so tight that you can't slip a finger under it. Immobilize the injured part and keep it below heart level.

With all snakebites, keep the person warm, reassured, and quiet. Move the person only if needed.

When caring for a snakebite, do not apply local cooling. Do not cut through a snakebite wound, apply suctioning, or use a tourniquet. These treatments are not effective and may be harmful.

Spider Bites

Spiders typically inhabit out of the way places such as wood piles or outbuildings. There are certain spiders that can be dangerous to humans. This includes the black widow and the brown recluse.

Initially, venomous spider bites are often difficult to identify. Small puncture marks and bleeding may be seen. Tenderness, swelling, pain, itchiness, and redness at the bite site can develop. Over time, cramping pain and muscular rigidity in the body may occur. A person may experience fever, weakness, nausea and vomiting, or difficulty breathing.

If you suspect a severe reaction from a spider bite may be occurring, activate EMS. Keep the person warm, reassured, and quiet.

Stinging Insects

Stinging insects such as bees, wasps, and fire ants are normally passive except when in defense of their nests or territories. While wasps and fire ants can sting repeatedly, the stinger of a honey bee detaches from its body, remains embedded in the skin, and continues to inject venom. If a stinger is present in the skin, quickly remove it.

It is possible for a life-threatening allergic reaction to arise. Monitor the person for at least 30 minutes to see if her condition worsens. If you suspect a severe reaction is occurring, activate EMS without delay. If the person carries a prescribed epinephrine auto-injector, assist the person with using it.

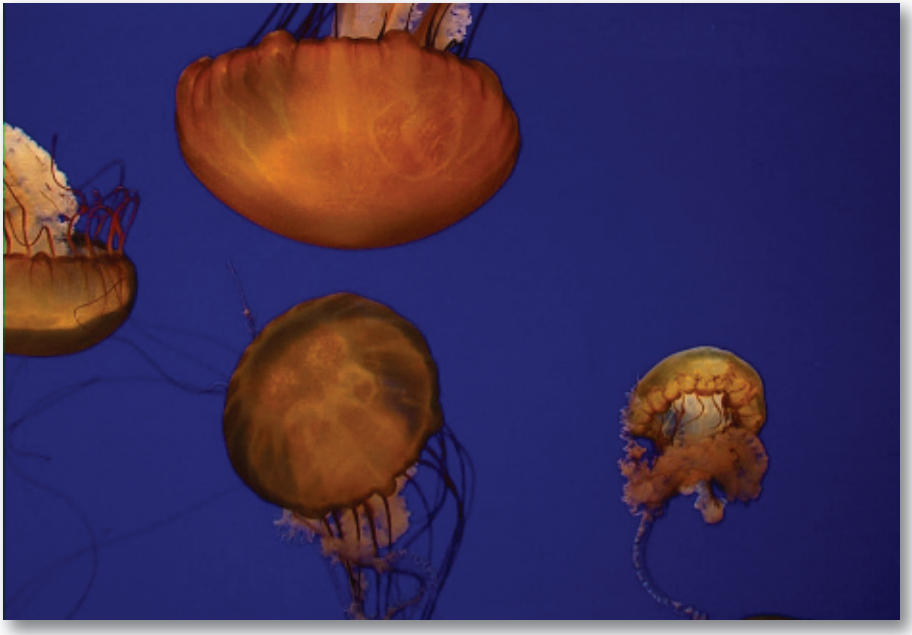
Tick Bites

Ticks are blood-feeding insects that are typically found in tall grass and shrubs. The biggest concern with tick bites is the exposure and transmission of infectious disease.

When a tick bites, it attaches itself firmly to the skin. To remove it, grasp it close to the skin with tweezers or a tick removal tool. Pull straight up with a steady, slow motion. If portions of the tick remain in the skin, seek further medical attention.

Do not use fingernail polish, petroleum jelly, a glowing hot match, or alcohol to remove a tick. These actions have no proven value and may cause additional problems.

Marine Animal Stings



Stings from marine animals such as fire coral, sea anemones, and jellyfish can occur when swimming or diving in the ocean. Stings can result in significant pain at the sting site and a raised, red, itchy rash.

Wash the sting site with household vinegar as soon as you are able to for at least thirty seconds to deactivate the venom and prevent further stinging. To help reduce pain, shower or immerse the sting site with hot water for at least 20 minutes or until the pain subsides. The water should be as hot as the person can safely tolerate.

Stingrays can also be encountered in the ocean. A stingray punctures the skin with a barb to inject venom. Intense pain can occur at the sting site. Immerse the injured area in water as hot as the person can tolerate for 30–90 minutes to deactivate the venom and help relieve pain.[viii] Carefully clean out the wound site.

Severe reactions to marine animal stings can include difficulty breathing, heart palpitations, weakness, and fainting. If this occurs, activate EMS immediately.

Human and Animal Bites

Human and animal bites can cause significant injury and bacterial infection. Bites from animals such as raccoons, skunks, bats, and foxes can also cause rabies. Left untreated, rabies is fatal.

Control any bleeding with direct pressure. Wash the bite and flush with large amounts of water. Seek professional medical attention.

References

The MEDIC First Aid *BasicPlus Student Guide* is based upon the following standards, guidelines, and recommendations:

- "2010 International Consensus on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science with Treatment Recommendations." *Circulation* 122, suppl. 2 (2010): S250-S581.
- "2010 American Heart Association and American Red Cross International Consensus on First Aid Science with Treatment Recommendations." *Circulation* 122, suppl. 2 (2010): S582-S605.
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- Other recommendations or sources as referenced by endnotes.

End Notes

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Glossary

Abdominal Thrust
Thrusts administered to the abdomen of a responsive, choking person to force air in the lungs to dislodge an object blocking a person's airway.

Acute Coronary Syndrome (ACS)
Often described as a heart attack, ACS occurs when there is reduced blood flow to the tissues of the heart.

Airway
The passageway between mouth and lungs that allows life-sustaining oxygen into the body.

Altered Mental Status
A significant change in a person's personality, behavior, or consciousness, which may indicate a serious medical problem.

Amputation
A complete loss of a body part.

Anaphylaxis
A severe allergic reaction with an extreme response of the body's immune system to something it is very sensitive to.

Arterial Bleeding
A wound to an artery, which is characterized by bright-red, oxygen-rich blood spurting from the wound.

Assessment
Checking for immediate, life-threatening problems.

Asthma
Reactive airway disease, affecting the small air passages in the lungs.

Automated External Defibrillator (AED)
A portable, computerized device that automatically analyzes for life-threatening heart rhythms and provides corrective treatment through adhesive pads on a person's chest. Most AEDs have specially designed pads or mechanisms available that reduce the defibrillation energy to a level more appropriate for a smaller body size.

Bloodborne Pathogens
Potentially infectious body fluids.

Bystander
Someone who is present but not taking part in a situation or event.

Cardiopulmonary Resuscitation (CPR)
A combination of rescue breaths and chest compressions performed on a person experiencing cardiac arrest, intended to restore some oxygen to the brain.

Chain of Survival
A concept of five interdependent links (early access to EMS, early CPR, rapid defibrillation, effective advanced care, and integrated post-cardiac care) that describe the most effective approach for treating sudden cardiac arrest.

Chest Compression
Pressing down on a person's chest in a rhythmic motion to increase pressure inside the chest and directly compress the heart to keep blood circulating to the brain and other internal organs.

Chest Thrust
Thrusts administered on the breastbone of a responsive, choking person to force air in the lungs to dislodge an object stuck in the person's airway.

Compression-Only CPR
An alternative to conventional (compressions and rescue breaths) CPR in which the immediate use of ongoing chest compressions are provided for a person who has suddenly collapsed and is unresponsive and not breathing (or breathing inadequately).

CPR Mask
A protective barrier device used to prevent contact with potentially infectious body fluids while performing rescue breaths on a person. The mask fits over the mouth and nose of the person and includes a breathing valve for the first aid provider to safely administer rescue breaths.

CPR Shield
A protective barrier device used to prevent contact with potentially infectious body fluids while performing rescue breaths on a person. The shield consists of a flat square of malleable plastic with either a hard-plastic breathing valve or a filter.

Defibrillation
The process of passing an electrical shock through the heart to restore a normal pumping rhythm.

Diabetes
A disease in which the body cannot effectively use sugar for energy, which can lead to life-threatening problems if not managed properly. A diabetic emergency is often characterized by an altered mental status.

Direct Pressure
The act of applying pressure directly on an open wound to help slow bleeding.

Dislocation
The separation of bone ends at a joint.

DOTS
Acronym used to help with physical assessment: **D**eformities, **O**pen injuries, **T**enderness, **S**welling.

Emergency Action Plan (EAP)
A site-specific plan for workplace or home that contains specific procedures on how to respond to internal emergencies and activate EMS.

Emergency Medical Services (EMS)
The emergency medical response system developed within your community, typically using a specialized emergency communication network to gather information and dispatch appropriate emergency resources. A first aid provider can activate EMS in an emergency, usually by calling an emergency number.

Epinephrine Auto-Injector
A physician-prescribed, spring-loaded needle that rapidly administers a measured, single dose of epinephrine for severe allergic reaction.

Evisceration
Abdominal organs protrude through an open wound resulting from injury to the abdomen.

Fracture
Breaks in bone.

Frostbite
Develops when body parts are exposed to extreme cold and skin freezes.

Good Samaritan Law
A law enacted in all states to legally protect trained providers who voluntarily stop to help, act prudently, do not provide care beyond training, and are not completely careless in delivering emergency care.

Head-tilt, Chin-lift
A technique intended to open the person's airway, involving tilting the person's head back and lifting the person's chin. Technique results in the base of the tongue lifting away from the back of the throat.

Heart Attack
Reduced blood flow to the tissues of the heart, also known as acute coronary syndrome (ACS). It is usually characterized by pain, severe pressure, or discomfort in the chest.

Hypothermia
A generalized cooling of the body that is a life-threatening condition, occurring when the internal core body temperature has decreased to 95° F or less.

Impaled Object
An object that penetrates a body part and remains embedded.

Implied Consent
A legal concept referring to the legitimate assumption that an unresponsive person would give permission to be helped if responsive.

Internal Bleeding
A condition in which an injury causes bleeding inside the body, which can be difficult to detect. Though the skin is intact, blood vessels have broken and are leaking blood into the body tissues. If the injury is substantial enough and it goes untreated, it can lead to shock and become a potentially life-threatening problem.

Mechanism of Injury
The process by which external force results in injury.

Nebulizer
A device that uses compressed air to turn liquid medicine into a mist for inhaling.

Pacemaker or Automated Internal Defibrillator
A surgically implanted device, which may be noticeable by a lump or surgical scar.

Protective Barrier
Anything that helps reduce the risk of exposure to potentially infectious body fluids. Some examples of effective protective barriers include latex (or non-latex) gloves, and ventilation shields and masks.

Recovery Position
The position in which an unresponsive breathing person is placed to drain fluids from the mouth and keep the tongue from blocking the airway; place the person on his or her side with head slightly forward.

Rescue Breaths
Artificial breaths given to someone who is not breathing; administered by blowing air into the mouth to inflate the lungs.

SAMPLE
Acronym used to help providers remember what to ask a person about: Symptoms, Allergies, Medications, Past medical history, Last oral intake, Events leading to problem.

Secondary Assessment
Follows a primary assessment that indicates no life-threatening problems, to gather additional information about the person's chief complaint, what happened, and medical conditions.

Seizure
Triggered by excessive electrical activity within the brain, which leads to jerking movements of the body, also called convulsions.

Shock
Develops when poor blood flow creates a shortage of oxygen to body tissues. Any serious illness or injury has the potential to cause it; if not treated early, it can get worse and become life threatening. It can be characterized by diminished responsiveness and skin that is pale, cool, and sweaty.

Spinal Motion Restriction
Manual stabilization of the head by cupping the hands on both sides of the head without covering the ears; minimize any motion of head, neck, and back.

Splint
Stabilizing an injured limb to reduce pain and prevent further injury, only when there is an extended EMS response time or a need to move the injured person.

Sprains
Tearing injuries to ligaments that hold joins together.

Strains
Stretching or tearing injuries to muscles or tendons.

Stroke
Occurs when the blood supply to a portion of the brain is suddenly interrupted. Commonly occurs when a blood clot gets caught in a blood vessel. In most cases, brain cells die. Signs can include numbness of face, arm, or leg, especially on one side of the body; confusion; change in the ability to speak or understand; change in sight and balance; and severe, sudden headache.

Sudden Cardiac Arrest
Occurs when the normal electrical impulses in the heart unexpectedly become disorganized; the normally coordinated mechanical contraction of the heart muscle is lost, and a chaotic, quivering condition known as ventricular defibrillation can occur. Blood flow to the brain and body stops abruptly. It is characterized by a stoppage of breathing, sudden collapse, and loss of consciousness.

Trained Provider
Someone who is trained in the delivery of CPR and use of an AED, until personnel are available to provide more advanced care. The trained provider is often the first emergency care giver on the scene and plays a critical role in survival.

Tourniquet
Applied to a limb with heavy bleeding when direct pressure is not possible or not effective at controlling bleeding.

Universal Precautions
An approach that recommends handling all blood and other body substances as if they are infectious. To be effective, use protective barriers between yourself and an ill or injured person, regardless of relationship or age.

Unresponsive
A condition in which the person is unconscious and does not regain consciousness when addressed or tapped by the trained first aid provider.

Ventricular Fibrillation
A chaotic, quivering heart rhythm that interferes with the heart's ability to pump blood.

BasicPlus CPR, AED, and First Aid for Adults

Instructions: Please rate class instruction as indicated below. Evaluation ratings and comments are used to improve our instructional techniques and materials. Any information you give us is confidential. Thank you for your help.

Class Information

Instructor _____ Date of Class _____

Type of class: ☐ Initial ☐ Renewal

Class Instruction

Use this key to rate the items below:

5–Excellent, **4**–Very Good, **3**–Good, **2**–Fair, **1**–Poor

	5	4	3	2	1
First Aid Provider	☐	☐	☐	☐	☐
CPR	☐	☐	☐	☐	☐
Defibrillation	☐	☐	☐	☐	☐
Choking	☐	☐	☐	☐	☐
Caring for injury	☐	☐	☐	☐	☐
Caring for Sudden Illness	☐	☐	☐	☐	☐

Additional Questions

Did you watch the program video? ☐ Yes ☐ No

Was your class conducted in a relaxed, positive manner? ☐ Yes ☐ No

Do you feel a sufficient amount of time was spent doing hands-on skill practice? ☐ Yes ☐ No

Self Assessment

Use this key to rate the items below:

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	5	4	3	2	1
How would you rate your emergency care skills BEFORE taking the MEDIC FIRST AID® BasicPlus class?	☐	☐	☐	☐	☐
How would you rate your emergency care skills AFTER taking the MEDIC FIRST AID® BasicPlus class?	☐	☐	☐	☐	☐

Course Materials

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	5	4	3	2	1
Program Video	☐	☐	☐	☐	☐
Student Guide	☐	☐	☐	☐	☐

Comments

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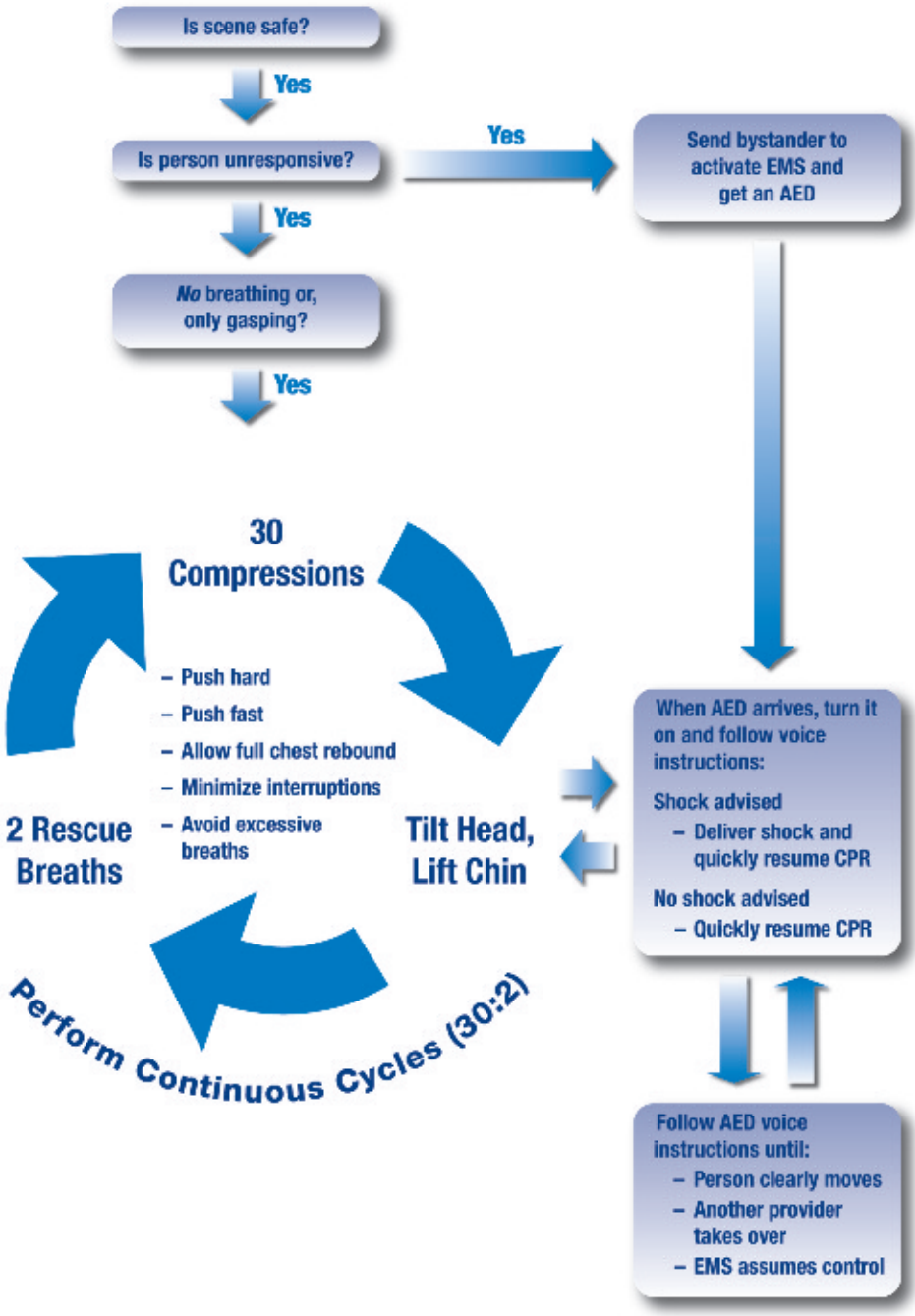
CPR and AED Algorithm



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